

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

1. (Currently Amended) A method performed with an enterprise storage system comprising disk storage and sequential storage media, the method serving data storage needs of a given client coupled to the enterprise storage system via a network, the method comprising:

performing a physical device level backup of data from the disk storage to the sequential storage media, while minimizing demands on the client, the device level backup comprising a complete image backup of data in a host device as defined from a perspective of the given client, wherein the physical device backup comprises:

a data manager obtaining a host device map from the client;
the data manager obtaining a file system map from the client;
the data manager copying raw data of the host device on the disk storage to the sequential storage and creating a restore mapping, the restore mapping identifying sequential bit position information of the sequential storage media and tracking correspondence among such bit positions to given files and bit positions within the given files; and
persisting the host device map and the file system map on disk media; and

performing a logical restore of data on a file by file basis from physically backed data on the sequential storage media, the logical restore involving locating files requested by the client on the sequential storage media and recovering the files from the sequential storage media, the files comprising files defined in accordance with a files system defined by the client.

2. (Cancelled)

3. (Cancelled)

1 4. (Currently Amended) The method according to claim 13, wherein the logical restore
2 comprises:
3 receiving a request for a restore of given files;
4 creating a tape selection map, with blocks to be restored ordered so as to
5 correspond to tape positions monotonically ascending;
6 obtaining from the client destination information including target block locations
7 for all blocks of the files being restored;
8 prepare a refreshed file system map describing preallocated target locations to be
9 reserved on the disk storage;
10 correlate source block information with target block information and create an
11 instructive consolidated list including (i) block skip information directing that certain numbers of
12 blocks be skipped over and not restored at certain points in the restore pass on the sequential
13 storage media and including (ii) a destination block for blocks preceding~~preceeding~~ and
14 succeeding the blocks to be skipped; and
15 making a single pass on the sequential storage media, restoring all requested data
16 files.

17 5. (New) An enterprise storage system, comprising:
18 a disk storage device, the disk storage device capable of storing a plurality of files
19 provided by a client in communication with the enterprise storage system;
20 a sequential storage media capable of storing a backup of at least a portion of the plurality
21 of files;
22 a data manager in communication with the sequential storage media and the disk storage
23 device, the data manager capable of communicating with a client to store the plurality of files on
24 the disk storage device and to store a backup of at least a portion of the plurality of files on the
25 sequential storage media, wherein the data manager includes computer-readable instructions to
26 enable:
27 receiving a request for a restore of a portion of the plurality of files;
28 creating a sequential media selection map, the sequential media selection map
29 comprising blocks to be restored ordered so as to correspond to monotonically ascending

1 positions on the sequential storage media;
2 obtaining destination information including target block locations for at least a
3 portion of the blocks of the files being restored;
4 preparing a refreshed file system map;
5 correlating source block information with target block information;
6 creating a list comprising (i) block skip information directing that certain numbers
7 of blocks be skipped over and not restored at certain points in the restore pass on the sequential
8 storage medium and further comprising (ii) a destination block for blocks preceding and
9 succeeding the blocks to be skipped; and
10 making a single pass on the sequential storage medium, restoring at least a portion
11 of the requested data files in accordance with the list.

12 6. (New) The system of claim 5, wherein the data manager further comprises instructions to
13 enable requesting a preallocation of the files to be restored.

14 7. (New) The system of claim 5, wherein the refreshed file system map describes
15 preallocated target locations to be reserved on the disk storage.

16 8. (New) The system of claim 5, wherein the data manager further comprises instructions to
17 enable receiving a request for a restore of substantially all files of the plurality of files.

18 9. (New) The system of claim 5, wherein the disk storage device further comprises at least
19 one of a file system map and a hard disk map, the hard disk map comprising a map of the disk
20 storage device.

21 10. (New) The system of claim 9, wherein the data manager further comprises instructions to
22 enable moving raw data from the disk storage device to the sequential storage media in
23 accordance with the hard disk map.

24 11. (New) The system of claim 10, wherein the data manager further comprises instructions
25 to enable creating a restore map, the restore map identifying sequential bit position information

1 of the sequential storage media and tracking correspondence among such bit positions to files
2 and bit positions within the plurality of files.

3 12. (New) A method for performing a physical device level backup of data from disk storage
4 to a sequential storage media, the method comprising:

5 obtaining a host device map;

6 obtaining a file system map;

7 copying raw data of a host device on the disk storage to a sequential storage media;

8 creating a restore map, the restore map identifying sequential bit position information of
9 the sequential storage media and tracking correspondence among such bit positions to a plurality
10 of files and bit positions within the plurality of files; and

11 persisting the host device map and the file system map on a disk media.

12 13. (New) The method of claim 12, wherein at least one of the host device map and file
13 system map is obtained from a client.

14 14. (New) The method of claim 12 further comprising enabling a search within the
15 sequential storage media for a particular file within the plurality of files.

16 15. (New) A method of performing a logical restore of data on a file by file basis from
17 physically backed data on a sequential storage media, the method comprising:

18 receiving a request for a restore of a plurality of files;

19 creating a sequential media selection map, the sequential media selection map comprising
20 blocks to be restored;

21 obtaining destination information including target block locations for all blocks of the
22 files being restored;

23 preparing a refreshed file system map describing preallocated target locations to be
24 reserved on a disk storage device;

25 correlating source block information with target block information;

26 creating a list comprising (i) block skip information directing that certain numbers of
27 blocks be skipped over and not restored at certain points in the restore pass on the sequential

1 storage media and further comprising (ii) a destination block for blocks preceding and
2 succeeding the blocks to be skipped; and
3 making a single pass on the sequential storage media, restoring all requested data files in
4 accordance with the list.

5 16. (New) The method of claim 15 wherein the blocks to be restored in the sequential media
6 selection map are ordered so as to correspond to monotonically ascending positions on the
7 sequential storage media.

8 17. (New) The method of claim 15 wherein the destination information is obtained from a
9 client and wherein the method further comprises commanding the client to preallocate the
10 plurality of files to be restored.

11 18. (New) The method of claim 15, wherein the request for restore of plurality of files is
12 received from a client and wherein the plurality of files comprise files defined in accordance
13 with a file system defined by the client.

14 19. (New) The method of claim 15, wherein the plurality of files comprises substantially all
15 files stored on the sequential storage media.

16 20. (New) The method of claim 15, further comprising creating a sequential media restore
17 map.